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JAMES FLETCHER, LL. D., F. R. S. C., F. L. S.

We are happy to be able to begin the thirtieth volume of the CANADIAN ENTOMOLOGIST by presenting to our readers an excellent portrait of DR. JAMES FLETCHER, whose name is a household word among entomologists, not only in Canada, but throughout North America, and in many parts of the world besides. Born and educated in England, Dr. Fletcher came to this country, when a young man, as a junior officer in the Bank of British North America, and soon began to devote his leisure hours to the study of insects and plants. Finding the work of a bank by no means congenial to his literary and scientific tastes, he obtained a position as assistant in the Library of Parliament at Ottawa. It was not long before his talents and attainments in botany and entomology became widely known, chiefly through his contributions to this magazine and the annual reports of our Society. His first paper in the latter was an article on Canadian Buprestidæ, which was published in 1878, while his first contribution to this magazine appeared in January, 1880. During all the years that have followed no volume of either publication has been issued without some valuable articles from his pen.

In 1878 he became a member of the Council of the Entomological Society of Ontario, and every year since has been elected to hold some office in the Society, being four times vice-president, and for three years, 1886-8, president. In 1879 he was one of the originators of the Ottawa Field Naturalists' Club, the most successful society of the kind in the Dominion, and more recently he suggested, and by his influence and energy accomplished, the formation of the important Association of Economic Entomologists of North America.

The first official recognition of his attainments was in 1885, when he was appointed Honorary Entomologist to the Department of Agriculture at Ottawa, and in that capacity, though much hampered by his duties in the library, he published a valuable report on the injurious insects of the year. Two years later his present position of Entomologist and Botanist to the Experimental Farms of the Dominion was conferred upon him. In

the ten years that have now gone by, he has done an enormous amount of valuable work, as shown in his annual reports and evidence before the Standing Committee of the House of Commons on Agriculture, his voluminous correspondence with farmers and fruit-growers all over the Dominion, and his addresses to Farmers' Institutes and other gatherings. No one in this country has done so much as he to instruct the people in a practical knowledge of their worst insect foes and the best methods of dealing with them, while probably no one but he could have given the Province of Manitoba the information and the advice that he has repeatedly afforded by his lectures, addresses, and publications on the noxious weeds of that portion of the Dominion. All his friends will, we are sure, unite with us in the earnest wish that he may long be spared to carry on his admirable work, which is of such vast importance, not only to those directly interested in the products of the soil, but to all the dwellers throughout this wide Dominion.

A GENERIC REVISION OF THE LACHNEIDÆ
(LASIOCAMPIDÆ).

BY HARRISON G. DYAR, WASHINGTON, D. C.

The genera of the same regions are included in the present paper as in a former one on Hypogymnidæ (CAN. ENT., XXIX., 12). The palæarctic Lachneids of the old world have been admirably treated by Aurivillius (Iris, Dresden, vii., 121-185), and I am indebted to his work for valuable information, as well as to the works of Kirby and Hampson. In going over the literature I did not always confirm Kirby's types of the genera; but rather than disturb the matter again, I have accepted them as modified by Aurivillius; but with the restoration of Hübner's Tentamen names, I drop *Gastropacha*, as it is a synonym of *Lasiocampa*, being proposed in the same sense to include all the species of the family. Following Wallengren, I separate *catax* and *rimicola* from *Eriogaster* as defined by Aurivillius for convenience in the table, though I do not doubt that the venation is as variable as Aurivillius states (Iris, vii., 147). I cannot separate the new genus *Paralebeda*, Auriv., from *Odonestis* by anything that is stated.

The oldest plural term for the family is again Hübner's *Lachneides*, and must form the family name as shown by Grote.

The synoptic table is followed by a list of genera and species. Only those species are placed which I have either seen or could determine from recent works:

1. Secondaries with veins 7 and 8 from intercostal cell, the bar short, or vein 7 from the subcostal vein 2.
 Secondaries with very large intercostal cell, vein 7 near 6; the bar long 23.
2. Primaries ♀ long and narrow, apex produced 3.
 Primaries broader 5.
 Wings of female absent 30.
3. Primaries with veins 8 to 10 stalked *Bhima*.
 Primaries with vein 8 not stalked 4.
4. Secondaries with veins 4 and 5 stalked *Taragama*.
 Secondaries with veins 4 and 5 from the angle of the cell *Suana*.
5. Costa of secondaries highly excised *Lebeda*.
 Costa of secondaries slightly or not at all excised 6.
6. Primaries with veins 6, 7 free or stalked; 6 to 8 stalked; 4, 5 of secondaries as above 7.
 Primaries with 6 to 8 stalked; 3 to 5 of secondaries stalked *Syrastrena*.
 Primaries with veins 7 and 8 stalked 21.
7. Outer margin of primaries evenly rounded 8.
 Outer margin of primaries crenulate *Dendrolimus*.
 Primaries with the outer margin angulated and excised *Bharettia*.
8. Palpi long 9.
 Palpi short 10.
9. Veins 6 and 7 of primaries from cell *Arguda*.
 Veins 6 and 7 stalked *Odonestis*.
10. Cell of both wings closed 11.
 Cell of primaries closed, of secondaries open 20.
 Cell of both wings open *Trabala*.
11. Very large (80 to 110 mm.); primaries rather elongated *Pachypasa*.
 Smaller, primaries trigonate; veins 4 and 5 of secondaries from the cell 12.
12. Female with large, thick, hairy anal tuft *Eriogaster*.
 Female without this tuft 13.
13. Veins 9 and 10 of primaries on a stalk half way to apex or less 14.
 Veins 9, 10 on a stalk more than half way to apex of wing 18.
14. Small species, wings short, 7, 8 of secondaries stalked from narrow and very small intercostal cell 17.

- Moderate sized, 7, 8 from distinct, elliptical, intercostal cell.....15.
 Moderate sized; veins 6 to 8 of primaries stalked...*Edwardsimemna*.
15. Sexes similar, wings broad.....16.
 Sexes dissimilar, wings more elongate.....*Gloveria*.
16. Intercostal cell of secondaries half as long as discal cell...*Lasiocampa*.
 Intercostal cell of secondaries shorter.....*Macrothylacia*.
17. Veins 4 and 5 of secondaries from angle of cell.....*Trichiura*.
 Veins 4 and 5 of secondaries stalked.....*Chilena*.
18. Vein 8 of primaries from cell; 4, 5 of secondaries from cell.....*Pecilocampa*.
 Vein 8 on a stalk; 4, 5 of secondaries from cell; antennæ short..19.
 Vein 8 on a stalk; 4, 5 of secondaries stalked.....*Hypopacha*.
19. Thorax evenly haired.....*Artace*.
 Thorax or base of abdomen with a patch of long spatulate hairs.....*Tolype*.
20. Outer margin of both wings crenulate.....*Crinocraspeda*.
 Outer margin entire.....*Malacosoma*.
21. Primaries with vein 6 from the cell.....22.
 Primaries with vein 6 stalked with 7 and 8.....*Alompra*.
22. Female with a large abdominal tuft of hairs; veins 4, 5 of secondaries from cell.....*Lachneis*.
 Female without this tuft; veins 4, 5 of secondaries stalked...*Kosala*.
23. Primaries with the stalk of 9, 10 short, less than half way to apex..24.
 Primaries with the stalk long, more than half way to apex.....27.
 Primaries with the stalk reaching the apex, vein 10 absent..*Heteropacha*.
24. Primaries short, apex rounded.....*Lenodora*.
 Primaries longer, apex square or acute.....25.
25. Palpi long.....*Cosmotriche*.
 Palpi short.....26.
26. Outer margin of primaries crenulate; head prominent..*Selenephera*.
 Outer margin entire; head sunken.....*Diplura*.
27. Secondaries with vein 3 from the cell.....28.
 Secondaries with veins 3 to 5 stalked.....*Estigena*.
28. Palpi long; anal angle of primaries slightly emarginate.....29.
 Palpi short; anal angle of primaries with a square notch..*Epicnaptera*.
29. Primaries produced at apex, outer margin very oblique..*Stenophylloides*.
 Primaries broader; outer margin convex, crenulate.....*Eutricha*.
30. Fore wings of male with 12 veins; female without woolly anal tuft.....*Eustaudingeria*.

Fore wings with 11 veins; female with woolly anal tuft.. *Chondrostega*.

Bhima, Moore.

undulosa, Walk.

Taragama, Moore.

siva, Lef.

dorsalis, Walk.

Swana, Walker.

concolor, Walk.

Lebeda, Walker.

nobilis, Walk.

Syrastrena, Moore.

minor, Moore.

Dendrolimus, Germar.

pini, Linn.

Bharetta, Moore.

cinnamomea, Moore.

flammans, Hampson.

Arguda, Moore.

flavivittata, Moore.

bherola, Moore.

rosea, Hamps.

vinata, Moore.

rectilinea, Hamps.

decurtata, Moore.

albigutta, Walk.

Odonestis, Germar.

pruni, Linn.

hyrtaca, Cram.

punctata, Walk.

latipennis, Walk.

aconyta, Cram.

nanda, Moore.

fulgens, Moore.

litterdahlii, Butl.

ampla, Walk.

undans, Walk.

repanda, Walk.

recta, Walk.

obliquifascia, Swinhoe.

plagifera, Walk.

Trabala, Walker.

vishnu, Lef.

irrorata, Moore.

Pachypasa, Walker.

otus, Drury.

Trichiura, Stephens.*

crataegi, Linn.

ilicis, Ramb.

hasiana, Moore.

Chilena, Walker.

similis, Walk.

strigula, Walk.

Gloveria, Packard.

arizonensis, Pack.

dentata, Hy. Edw.

olivacea, Hy. Edw.

venerabilis, Hy. Edw.

gargamelle, Strecker.

diazoma, Grote.

Howardi, Dyar.

dolores, Neum. & Dyar.

Lasiocampa, Schrank.

trifolii, Esper.

quercus, Linn.

Macrothylacia, Rambur.

rubi, Linn.

Edwardsimemna, Neum. & Dyar.

jalapæ, Hy. Edw.

Pæcilocampa, Stephens.

populi, Linn.

Artace, Walker.

punctistriga, Walk.

*This name should not be confounded with *Trichura*, Hubn., a genus of the *Euchromiidae*.

- Tolyte*, Walker.
 velleda, Stoll.
 distincta, Moore.
 laricis, Fitch.
 brevicrista, Dyar.
Hypopacha, Neum. & Dyar.
 grisea, Neum.
Crinocraspeda, Hampson.
 torrida, Moore.
Malacosoma, Hübner.
 neustria, Linn.
 franconica, Esp.
 intermedia, Mill.
 alpicola, Staud.
 castrensis, Linn.
 luteus, Oberth.
 testacea, Motsch.
 indica, Walk.
 americana, Fab.
 fragilis, Stretch.
 pluvialis, Dyar.
 ambisimilis, Dyar.
 californica, Packard.
 constricta, Stretch.
 dissidia, Hübn.
Alompra, Moore.
 ferruginea, Moore.
Lachneis, Hubner.
 catax, Linn.
 rimicola, Hubn.
Eriogaster, Germar.
 lanestrus, Linn.
Kosala, Moore.
 sanguinea, Moore.
 modulata, Swinhoe.
 rufa, Hampson.
 flavosignata, Moore.
Heteropacha, Harvey.
 rileyana, Harv.
- Lenodora*, Moore.
 vittata, Walk.
 signata, Moore.
 semihyalina, Swinhoe.
Cosmotriche, Hubner.
 potatoria, Fabr.
 laeta, Walk.
 divisa, Moore.
 castanea, Hamps.
 signata, Moore.
 isocyma, Hamps.
 pyriformis, Moore.
 lineata, Moore.
Selenephra, Rambur.†
 lunigera, Esp.
Diptura, Rambur.
 loti, Ochs.
Estigena, Moore.
 pardalis, Walk.
Epicnaptera, Rambur.
 ilicifolia, Linn.
 suberifolia, Dup.
 tremulifolia, Hubn.
 americana, Harr.
 Dyari, Rivers.
Stenophylloides, Hampson.
 sikkima, Moore.
Eutricha, Hubner.
 quercifolia, Linn.
 populifolia, Esp.
 undulifera, Walk.
 sinuata, Moore.
 divaricata, Moore.
Eustaudingeria, Dyar.‡
 vandalicia, Mill.
Chondrostega, Lederer.
 pastrana, Led.
 subfasciata, Klug.
 farciana, Staud.
 hyrcana, Staud.
 palæstrana, Staud.

†Kirby (page 813) and Aurivillius are entirely at variance as to the type of this genus. I follow the latter author, not having seen the original work.

‡Staudingeria is preoccupied in the Pyralidæ.

NOTES UPON SPHINX CATALPÆ AT COALBURGH, W. VA.

BY W. H. EDWARDS, COALBURGH, W. VA.

I never had seen the imago of this species until the present year, and never saw the larva before 1896. Mr. Bruce tells me that it is a common species in parts of the Southern States, and that the eggs are laid in clusters, and the caterpillars are gregarious. In this paper I give simply my own observations. Early in August, 1896, I was asked what caterpillars were defoliating the Catalpa trees at Charleston, W. Va. It was said that some trees were completely stripped. I was unable to answer the question, as no caterpillar was shown to me. On my return home, I looked at my own Catalpa trees, and the first one that I happened on gave me a score or more of larvæ, one or two on a leaf, on the lower leaves of the tree. These larvæ were three to four inches long, and evidently had passed their last moult. One young tree, perhaps ten feet in height, with a top six feet in diameter, had been completely stripped of leaves. I found a single caterpillar of *Catalpæ* on it, to show what had done the mischief. I put the larvæ into a large flowerpot two-thirds filled with earth, and got, in a few days, some forty pupæ. Supposing these would go over to next year, I buried a few, and sent the rest to Mr. Bruce. In about two weeks he discovered that the imagoes had come out of his pupæ, and on examining mine the same result appeared.

On 4th October I discovered that a new brood of the larvæ was feeding, from one inch to one and three-quarters inches long; great numbers on a leaf. One had 23 larvæ on, and it seemed as if every leaf on the tree had more or less of them. I then went to a group of these trees at three hundred feet distance, and found both young and nearly full-grown larvæ; plenty of them. I reared thirty-six larvæ to pupæ, and all had changed by 23rd October. It was evident that there had been two broods of larvæ between middle of July and October, and it was probable that here was a most destructive species newly come into this region, that must have at least three broods in the season. I expected to see the trees stripped early in 1897, and that every Catalpa leaf thenceforward would have a struggle to live.

In spring of 1897 the first imago from these pupæ emerged 18th May, and by 25th I had nine, every one of them males. Of my 36 pupæ this was all the outcome. During the year I watched the Catalpa trees, but found no larvæ of the Sphinx, and no traces of them. The species, there.

fore, disappeared as suddenly as it came, and we hope to see it no more. I inquired in Charleston, but could learn of no appearance of the larvæ there. Certainly no Catalpa trees had been defoliated.

ENTOMOLOGICAL SOCIETY OF ONTARIO.

The annual meeting was held in London on the 12th and 13th of October last, when the following were elected officers for the year 1897-8:

President—Henry H. Lyman, M. A., Montreal.

Vice-President—Professor J. H. Panton, M. A., F. G. S., Guelph.

Secretary—W. E. Saunders, London.

Treasurer—J. A. Balkwill, London.

Directors: Division No. 1—W. H. Harrington, F. R. S. C., Ottawa.

Division No. 2—J. D. Evans, Trenton.

Division No. 3—Arthur Gibson, Toronto.

Division No. 4—A. H. Kilman, Ridgeway.

Division No. 5—R. W. Rennie, London.

Ontario Agricultural College—Prof. J. H. Panton, Guelph.

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Professor Wm. Saunders, LL.D., F.R.S.C., F.L.S.,
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Port Hope.

James Fletcher, LL.D., F.R.S.C., F.L.S., Ottawa.
John Dearnness, I.P.S., London.

Librarian and Curator—J. Alston Moffat, London.

Auditors—J. H. Bowman and Wm. Lochhead, London.

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Delegate to the Royal Society—J. D. Evans, Trenton.

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Library and Rooms Committee—Messrs. Moffat, Bethune, Dearnness, Saunders, and Balkwill.

ON CUTEREBRA EMASCULATOR, WITH DESCRIPTIONS OF SEVERAL ALLIED SPECIES.

BY D. W. COQUILLETT, WASHINGTON, D. C.

Cuterebra emasculator, Fitch.—This species was supposed by Dr. Brauer to be the same as his *C. scutellaris*, but an examination of Fitch's type, now the property of the National Museum, discloses the fact that it is identical with *C. fontinella*, Clark. When describing the hairs of the thorax as yellowish, Dr. Fitch had evidently examined them in a very bright light, under which conditions they have a deceptive yellowish appearance, but in reality are altogether black.

The following five species, which appear to be undescribed, belong to the same group as *fontinella*, in which the hairs of the middle of the mesonotum are black. They may be tabulated as follows:

1. Abdomen wholly polished, destitute of pollen.....2.
 Abdomen partly opaque pollinose, hairs of pleura largely or wholly yellowish.....4.
2. Hairs of pleura largely yellowish.....3.
 Hairs of pleura wholly black*tenebrosa*.
3. Pleura with a cluster of black hairs above the centre, front of male three times as wide as the distance between the two posterior ocelli.....*nitida*.
 Pleura destitute of a cluster of black hairs, front of male six times as wide, etc.....*polita*.
4. With a cluster of black hairs above the centre of the pleura, front of male three times as wide as the distance between the two posterior ocelli*lepivora*.

Without this cluster, front of male six times as wide, etc....*latifrons*.

Cuterebra lepivora, n. sp.—♂. Head black, destitute of light-coloured pollen, front at narrowest point three times as wide as distance between the two posterior ocelli, subopaque, an opaque streak of brownish pollen on each lower corner contiguous to the eyes, hairs of front black, several above the antennæ yellow; antennæ black, apical two-thirds of the arista and its hairs yellow; face and cheeks sub-shining, rugose, an opaque spot on each side of the face contiguous to the eyes, the hairs and those of the occiput pale yellow. Thorax black, subopaque, hairs of the dorsum black, a cluster above each wing and those of the pleura yellowish-white, a cluster of black hairs midway between the wing and the head; pleura opaque, two polished black spots above each front coxa; scutellum

black, its hairs also black. Abdomen shining steel-blue, the sides of the first three segments partly brown pollinose, on the second segment extending nearly half way to the middle of the dorsum, leaving numerous spots uncovered and polished, hairs of the abdomen, including those of the venter, black. Legs black, the femora toward their bases whitish pollinose, the hairs wholly black. Wings and calypteres brown.

♀. Same as the male, with these exceptions: Front nine times as wide as distance between the two posterior ocelli; face and cheeks smooth, opaque brownish pollinose, the upper part of the face and two spots each side, one of which is contiguous to the eye, the other nearly midway between it and the mouth, polished black. Hairs of venter of abdomen largely yellowish-white. Front femora each bearing a cluster of whitish hairs on the under side a short distance before the tip.

Length of male, 19 mm.; of female, 22 mm. One specimen of each sex. The female was bred by the writer from a larva found in a cotton-tail rabbit obtained near Anaheim, Cal. The male was collected July 28, 1896, at Corbett, Wyoming, by Mr. R. P. Currie.

Cuterebra nitida, n. sp.—♂. Differs from the above description of the male of *lepivora* only as follows: Front subshining, two opaque spots of brownish pollen each side contiguous to the eyes; no yellow hairs above the antennæ. Abdomen wholly polished, destitute of pollen. Front tibiæ at base of outer side white pollinose. Length, 19 mm. Los Angeles Co., Cal. One specimen, collected by the writer in September.

Cuterebra latifrons, n. sp.—♂. Differs from the above description of the male of *lepivora* as follows: Front at narrowest part six times as wide as the distance between the two posterior ocelli; two opaque spots of brownish pollen each side, contiguous to the eyes, face destitute of opaque spots. Pleura destitute of a cluster of black hairs. Abdomen reddish-brown, the last three segments partly covered with brownish pollen, leaving numerous spots uncovered and polished. Front tibiæ white pollinose on the base of the outer side. Length, 17 mm. Los Angeles Co., Cal. One specimen, captured by the writer in June.

Cuterebra polita, n. sp.—♂. Same as *latifrons*, except that the lower part of the front and upper part of the face are narrowly bordered with gray pollen next the eyes, and the abdomen is violet-black, wholly polished and destitute of pollen, femora destitute of whitish pollen. Length, 16 mm. National Park, Wyoming. One specimen, collected August 3, by Mr. H. G. Hubbard.

Cuterebra tenebrosa, n. sp.—♂. Differs from *lepivora* as follows: Front at narrowest point five times as wide as the distance between the two posterior ocelli; two spots of brownish pollen on each side of lower part of the front next the eyes, and two on the sides of the face, but one or more of them sometimes wanting; hairs of the head and thorax wholly black. Abdomen wholly polished and destitute of pollen. Tibiæ white pollinose at the base of the outer side.

♀. Same as the male, except that the front is seven times as broad as the distance between the two posterior ocelli.

Length of male, 20 mm.; of the female, 20 to 22 mm. Colorado, San José (Mrs. A. E. Bush), and Siskiyou Co. (James Behrens), Cal.; and Perry, Oregon. Eight males and three females.

All of the specimens upon which these descriptions are founded are now the property of the National Museum.

FURTHER OBSERVATIONS ON PAPILIO BAIRDII, EDW.

BY W. H. EDWARDS, COALBURGH, WEST VA.

On the 8th of June, 1897, I received from Mr. David Bruce, at Glenwood Springs, Colorado, about 30 eggs, laid by a typical female of *P. Bairdii*, confined over the food plant, *Artemisia dracunculoides*. These soon began to hatch, and I gave them fennel, on which they thrived.

The first moult was passed on 13th and next days, the second moult on 15th and next days. Two passed the third moult on 17th, and the fourth on 19th and 20th. By 22nd all were past fourth moult. The first pupa formed 24th, and by 25th, a. m., there were half a dozen pupæ. The last larva pupated on 28th, and I had in all 16 pupæ.

The first imago came out 4th July, the last July 9th, and one pupa will go over to 1898 or 9.

The outcome was as follows:

1 typical *Oregonia* ♂.

1 " " ♀.

2 typical *Brucei* ♂, the cells of fore wings black instead of yellow, and the other characteristic marks of *Brucei* as set forth in my paper in CAN. ENT.; also in vol. 3, Butt. N. A.

7 typical *Bairdii* ♂.

1 " " ♀.

Three pupæ dead.

Thus all three forms came from eggs of the single form *Bairdii* ♀.

TWO NEW SPECIES OF ORTHEZIA.

BY J. D. TINSLEY, MESILLA PARK, NEW MEXICO

Orthezia cheilanthi, n. sp.—Adult ♀. Length, 3.5 mm. Width, 3–3.5 mm. Length + ovisac, 6–8 mm. Width of ovisac, 3–4 mm. Body above covered with white secretion, which forms lateral and subdorsal longitudinal keels. A well-defined subdorsal furrow between the keels and the lateral margin formed by 3 or more rows of plates; these are smaller than the projecting marginal plates, which are flattened; caudal plate and the 3 or 4 plates on each side of it very little longer than the lateral plates. The structure of the secretion is compact; in most of the other species of *Orthezia* it is fluffy.

Ovisac with distinct longitudinal ridges above and nearly as distinct ridges below.

Legs and antennæ sepia brown, of nearly same shade throughout. Tibia about as long as femur, tarsus about half as long as tibia, claw only slightly curved. Femur 532 μ , tibia 471 μ , tarsus 289 μ , claw 90 μ .

Tibiæ and tarsi with several rows of spines. Antennæ (Fig. 1) with 8th joint longest, then 3rd, then 1st, then 4th, 5 and 7 next and subequal, 2 and 6 shortest and subequal.

For measurements see figure. Formula 8314(57)(26).

Derm with numerous small spines.

Larvæ.—♀. Legs and antennæ sepia brown.

Tibiæ decidedly longer than tarsi, claw long and slender, slightly curved.

Antennæ 6-jointed; 6 the longest, but not so long as 3 + 4 + 5; 3 usually longer than 4 or 5; 5 shortest. Formula 631245.

Habitat.—In Canons of the Organ Mts., New Mexico, on *Cheilanthes Fendleri*, Hook, at altitudes from 4,500 to 7,500 feet. The adult ♀ is usually found just beneath the surface of the soil, and the larvæ occur mostly upon the rachises of the fern.

Remarks.—This species is closely allied to *O. annæ*, Kkll., but differs from it in the following points:

- (a) The secretion is more compact; the space between the subdorsal keels is wider and the keels are not so prominent. The marginal plates are more flattened.
- (b) Colour of legs and antennæ is uniform, while in *annæ* the femora and tarsi are much darker than the tibiæ,



FIG. 1.

- (c) In *anna* joints 1 and 2 of antennæ are equal, and 3 is a third longer than 2, antennal formula being 83(12)(45)(67).

Orthezia graminis, n. sp.—Adult ♀. Length, 2–3 mm. Width, 2 mm. Length + ovisac, 6–13 mm. Width of ovisac, 2.5 mm. Colour, piceous. Body above with subdorsal and lateral keels; between the subdorsal and lateral keels the body is naked and shows up as a black band on each side, so that the dorsum appears to have three white longitudinal bands and two black longitudinal bands. Subdorsal keels slightly widest posteriorly. Lamellæ of lateral keels lengthening posteriorly. All the posterior lamellæ about subequal, and free from the firm chalk-white ovisac, which is longitudinally ridged dorsally and nearly smooth ventrally.

Legs and antennæ dark sepia brown.

Terminal segment of antenna darker than the others.

Tibia slightly longer than the femur; tarsus slightly more than half as long as the tibia.

Claw large, nearly straight. Femur 547 μ , tibia 593 μ , tarsus 320 μ , claw 83 μ .

Spines on tibia and tarsus small and not very numerous.

Antennæ (Fig. 2) with 3rd joint usually longest, although 3 and 8 may be subequal; 7th joint always the shortest; the other joints vary very much in their relative lengths in different specimens, so that no accurate formula can be given.

For measurements see figure. The antennæ have a few small, scattered spines.

Larvæ.—The larvæ appear to have 3 black and 4 white longitudinal bands, since the body shows up black between the subdorsal, and the subdorsal and lateral keels. Legs and antennæ sepia brown. Tibiæ and tarsi about subequal in length, both shorter than the femure. Claw slender and curved. Antennæ 6-jointed; 6 longest, but not quite so long as 3 + 4 + 5; 2 and 4 usually longer than 3; all very variable in relative lengths, so that no formula can be given.

Male unknown.

Habitat.—On culms and blades of grass, in the Mesilla Valley, New Mexico. These specimens were collected near the A. & M. College Farm, Sept. 26, 1897.

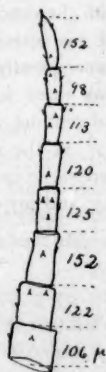


FIG. 2.

This species is related to *O. sonorensis*, Ckll., and *O. nigrocincta*, Ckll., but has a much longer ovisac than either of these. The arrangement of the subdorsal lamellæ is also different, and more black shows on the dorsum than in either of those species.

NOTE ON TRIGONALYS CANADENSIS, HARGTN.

BY GEO. W. TAYLOR, F. R. S. C., GABRIOLA ISLAND, B. C.

Wishing to obtain a series of males of our common ground wasps, I paid a visit on the afternoon of October 21st to a large nest of *Vespa occidentalis*, Cresson, that I had noted some time previously near my house. The day was dull and the wasps sluggish, but quite a number of males and perfect females were crawling about around the entrance to the nest. Among the wasps were some specimens of a conspicuous yellow and black Hymenopteron unlike anything that I had seen before. I secured nine specimens, all males, and on my return home easily made out by the help of Cresson's Synopsis that the insects belonged to the genus *Trigonalys*. The next step was to turn to Harrington's paper in the CAN. ENT., XXVIII., page 108, and compare my specimens with the description of the unique *Trigonalys canadensis*. Unfortunately, all my specimens were males, while Harrington's type was a female. Consequently the description did not quite fit, but on the following day I took three females and satisfied myself that the species I had found was the genuine *T. canadensis*.

As the wasps' nest, and a second one not 50 yards away from it, were quite near to my house I was able to visit them several times each day, and my captures of *Trigonalys* were as follows :

At nest No. 1.	Oct. 21,	3 p. m.,	9 ♂.
	22,	3 p. m.,	2 ♂ and 2 ♀.
	24,	9 a. m.,	1 ♂.
	25,	3 p. m.,	1 ♂.
	26,	10 a. m.,	1 ♂.
At nest No. 2.	Oct. 22,	3 p. m.,	1 ♂ and 1 ♀.
	23,	9 a. m.,	2 ♂.
	24,	2 p. m.,	3 ♂.
	25,	10 a. m.,	1 ♂.
	25,	3 p. m.,	.. 1 ♀.
	26,	3 p. m.,	1 ♂.

On Oct. 27 the nests failed to produce any *Trigonalys*, but I captured one ♂ at rest on the leaves of an apple tree much frequented by wasps and growing about 100 yards away from the nests.

Total specimens, 23 ♂ and 4 ♀.

After the last-named date the weather became cold and wet, and no more *Trigonalys* appeared; so after waiting a day or two, I dug up the nests, but was not able to detect any signs of the parasites. It will be noticed that the flies were not commonly taken in the afternoons, and in all cases (except the solitary specimen on the apple tree) they were at rest on the grass and weeds within a few feet of the entrance to the wasps' nest.

The type of *T. canadensis*, as may be seen by reference to the paper above cited, was taken at Victoria (75 miles south of this place) from what was supposed to be the nest of the same species of *Vespa* (*V. occidentalis*) which had built a suspended nest on the under side of a veranda roof.

As the ♂ of *T. canadensis* differs from the ♀ in several details, I have asked Mr. Harrington to kindly append a description of the former sex to the present note. My 4 pairs of *T. canadensis* have been disposed of as follows: 1 to Dr. Fletcher, 1 to Mr. Harrington, 1 to the Entomological Society, and one reserved for my own collection. The remaining ♂ specimens will be gladly given to any hymenopterists who may care to ask for them.

ADDENDUM BY W. H. HARRINGTON, F. R. S. C., OTTAWA.

In accordance with the wish expressed by my esteemed friend in the foregoing most valuable note on the occurrence of these rare and interesting insects, I have prepared, from the three pairs submitted for inspection, a description of the male, for in the original description (as is evident) the word male should read female.

Trigonalys canadensis, Hargtn.—Male. This sex differs in general appearance from the female, chiefly in the larger and broader abdomen, which makes it look much more robust. The following differences are noted: Antennæ 19-jointed, with the pedicel rufous, and terminal joints sub-serrate, very much like those of the antennæ of a ♂ *Vespa*, but much slenderer. Mandibles more prominent, with the teeth rufous. The yellow markings of thorax are more conspicuous, and are as follows: Angle of prothorax; spot at each humeral angle of mesonotum, two lunate spots on scutellum, and a smaller spot on each side between scutellum and base of

anterior wing; post-scutellum and a short, paler line in the crenate suture at each side of the same; angles of the metathorax, and two minute dots on pectus. The abdomen shows an additional segment, although it—the seventh—is very small, and in one specimen scarcely visible. Viewed from above, the abdomen appears almost quadrate, and shows little more than the broadly flattened segments two and three, which are sub-equal in size, the terminal segments being deflexed and somewhat recurved under the venter. Segments two to five have broad yellow sub-basal bands, the edges of which are uneven; that on the first segment is almost bracket-shaped; the sixth segment also shows more or less yellow at base. The venter has double yellow spots on segments one to four, those on the first two being large and irregular in shape. The second ventral segment has a prominent median truncated projection, and the third segment has a similar projection, but it is almost hidden beneath segment two; segments four and five are visible only as narrow margins; the margin of the sixth segment is deflexed so as to form two sub-triangular keels in front of the projections from second; the seventh is cleft longitudinally. From the manner in which the terminal segments are deflexed and bent inwardly, these features are not readily seen in all specimens. Described from three specimens from Gabriola Island, B. C.

The three females accompanying these males are all somewhat larger than the type, two being much more robust; the markings are, however, identical, except that one of the larger specimens shows faintly the yellow dots (mentioned for the ♂) on front of mesonotum and on scutellum, and between it and the wings. The other shows only indications, still fainter, of the spots between the scutellum and wings.

The wasps sent by Mr. Taylor are female, worker and male of *Vespa occidentalis*, Cresson, and in examining them I notice that the eyes of the male are more remote from the mandibles than are those of the female. Mr. Taylor suggests that the wasp from whose nest the Victoria ♀ was taken was *V. fernaldi*, Lewis, but I have not seen any examples of that species from Victoria.

MICROCELIA DIPHTEROIDES, GROTE.

Larva.—Cylindrical, green, smooth, the setæ very fine and inconspicuous, single, normal for the Noctuidæ. White dorsal and subdorsal lines, narrow, crinkly edged; white dots at tubercles i. and ii.; a pink-red stigmal line, edged with white below, distinct only at the ends of the body. (One blown specimen, Solidago, 5/9 '84, No. 3415. Coll. U. S. Nat. Mus.) This larva has no affinity with *Acronycta*.

HARRISON G. DYAR.

A NEW PARASITE OF THE HARLEQUIN CABBAGE BUG.

BY L. O. HOWARD, WASHINGTON, D. C.

The great damage which has been done to cabbage and other cruciferous plants by the harlequin cabbage bug (*Murgantia histrionica*) in its spread towards the north-east renders of interest any comments upon its natural checks. Professor H. A. Morgan, of the Louisiana Agricultural Experiment Station at Baton Rouge, has reared in considerable numbers a Proctotrypid parasite from the eggs of this destructive insect, which was named by Mr. Ashmead *Trissolcus murgantiæ*. With commendable enterprise, Professor Morgan has sent eggs of the cabbage bug to various Experiment Station Entomologists situated in localities which the *Murgantia* has more or less recently invaded, and to which it seems probable that the parasite has not yet followed it. Professor Webster, of Ohio, has announced that he is trying to introduce this beneficial insect, and Professor Johnson, of Maryland, is making the same effort with Professor Morgan's help.

As preliminary to this introduction experiment, Professor Johnson has made an effort to ascertain whether *Murgantia histrionica* is already parasitized in its egg condition in Maryland. In the course of this effort he has bred several specimens of a Chalcidid parasite which he has asked the writer to name. Examination shows this insect to belong to the genus *Encyrtus*. It is interesting to note that no *Encyrtinae* are known in Europe to live in heteropterous eggs. In this country, however, several species probably have this habit. Mr. Ashmead has reared a species from the eggs of *Anasa tristis*, in Florida, and in the Insectary of the Department of Agriculture at Washington species have been reared from the eggs of *Prionidus cristatus*, received from Texas, and from the eggs of an unknown heteropterous insect found upon pine in California. The species reared by Professor Johnson differs from any of these. It is very closely related to *Encyrtus mitratus*, Dalman, of Europe, the host relations of which are not known. The specimens in collections have been captured. It may ultimately prove to have been reared from heteropterous eggs.

As unsatisfactory as it is to describe isolated species, it is sometimes desirable, as in this instance. The parasite has some importance, and Professor Johnson wishes to refer to it definitely by name. The following description is therefore submitted :

Encyrtus Johnsoni, n. sp.

Female.—Length, 0.8 mm.; expanse, 2.1 mm. Belongs in the *E. mitratus* group. Antennal scape cylindrical; ovipositor scarcely extruded; wings hyaline, marginal vein lacking. Pedicel of the antenna three times as long as wide, nearly cylindrical, nearly three times as long as first funicle joint; first funicle joint a little longer than wide, remaining funicle joints increasing slightly in length; entire funicle subcylindrical; club as long as four preceding funicle joints together, somewhat swollen, ovate; entire flagellum slightly hairy. Body compact; thorax somewhat convex, abdomen rotund; mesonotum with short sparse white pile; vertex moderately narrow; ocelli forming right angle triangle; mesonotum finely transversely shagreened; mesoscutellum finely transversely shagreened at base, nearly smooth at tip; axillæ well separated at tip. General colour, metallic green; mesoscutum highly lustrous; axillæ and base of scutellum more opaque; tip of scutellum and abdomen shining; reflections of head violaceous; antennæ dark brown, nearly black; all legs uniformly light honey-yellow.

Male.—Closely resembles female, except in the following particulars: Antennæ, which are light brown in colour, have an obconical pedicel of which the breadth nearly equals the length, and which is shorter than funicle joint 1; first funicle joint a little longer than second, remaining joints subequal in length; all of funicle and club with long hairs; club not widened and nearly as long as two preceding funicle joints together; abdomen broadly subtriangular.

Type No. 1424. U. S. Nat. Mus. (Coll. Dept. Agric.)

Described from two females, one male, reared by W. G. Johnson, College Station, Md., Aug. 22, 1897, from eggs of *Murgantia histrionica*.

NOTES AND OBSERVATIONS ON SEVERAL SPECIES OF
DIPTERA.

BY F. M. WEBSTER, WOOSTER, OHIO.

Rhamphomyia mutabilis, Loew., has several times been observed preying upon *Bibio pallipes*, Say. I once saw hundreds of the former on a picket fence that had recently been whitewashed, and all appeared engaged in capturing the latter; at any rate hardly one could be found that was not engaged in sucking the life out of a victim. In one case the sexes were pairing while the female was lunching upon a recently captured *Bibio*.

Pipiza modesta, Loew., was reared from apple twigs infested by *Schizoneura lanigera* (Hausm).

Pegomyia bicolor, Weid., was reared from larvæ mining in the leaves of a species of *Rumex*.

Leucopsis bella, Loew., was reared from a melon louse, probably *Aphis gossypii*, Glover. Have reared apparently this species from Aphis on cherry.

From the same host was reared a species of *Cecidomyia*, the larvæ of which were observed feeding upon the Aphis. I have reared either this or a similar species from Aphis on plum leaves.

Masicera eufitchia, Towns., was reared from the larvæ of *Ænectra distincta* and *Teras minuta*, Rob., var. *cinderella*, Riley.

Euphorocera clavipennis, Maq., was reared from larvæ of *Datana ministra*, Dru.

Paraplagia spinosula, Bigot, was reared in numbers from larvæ feeding on alder. The host was the larvæ of some species of Sawfly, the adult of which was not reared.

The determinations were made by Mr. Coquillett by courtesy of Dr. L. O. Howard.

A NEW ORTHEZIA.

BY T. D. A. COCKERELL, N. M. AGR. EXP. STA.

Orthesia artemisiæ, n. sp.—♀. Immature form. Antennæ and legs piceous. Body covered with white secretion. Dorsum with two rows of dentiform tufts; the first four directed forwards; the remaining seven, decreasing in size caudad, directed backwards. Nine lateral tufts; the first, on a level with the second dorsal tufts, at right angles to the body; the others directed backwards, and about of equal length, except the last two, which are longer and narrower, the last being longest. Caudal tufts extending caudad of last lateral tufts.

♀.—Mature. Differs by having the lamellæ or tufts more elongated, the first dorsal erect, longer than broad; the remaining dorsal produced and no longer dentiform. The arrangement is now practically as in adult *O. urticæ* (L.), except that the first dorsal lamellæ are wide apart at tips, and the second dorsal lamellæ are smaller (instead of larger) than the third. The hindmost lateral lamellæ are also somewhat less produced than in *urticæ*. Antennæ and legs dark red-brown; antennæ 8-segmented, 3 longest; 5 a little longer than 4; 6 and 7 about equal, and shorter than

4; 8 about as long as 5. Length of insect, without ovisac, $2\frac{1}{2}$ mm. Ovisac moderate, white, distinctly ribbed.

Hab.—Embudo, New Mexico, Sept., 1897, on sage-bush (*Artemisia*), together with *Dactylopius lichtenioides*, Ckll. (new to N. M., empty sacs only found), and *Lecaniodiaspis artemisiae*, Ckll., MS. (♀ scale 3 mm. long, reddish ochreous, tuberculate, dull, thoracic region with two prominent transverse crests; antennæ apparently absent in adult, in younger examples represented by small rounded bristly prominences, without visible joints.)

At Embudo I found also *Orthesia nigrocincta*, Ckll., on *Gutierrezia* high up on the cliff. With the two new species just described by Prof. Tinsley, and the present insect, New Mexico now possesses five species of *Orthesia*. *O. artemisiae* is nearest to *O. anna*, but the latter has the lamellæ less definitely formed, and differs also in the antennæ.

BOOK NOTICE.

INSECT LIFE: AN INTRODUCTION TO NATURE STUDY AND A GUIDE FOR TEACHERS, STUDENTS, AND OTHERS INTERESTED IN OUT-OF-DOOR LIFE.—By John Henry Comstock, Professor of Entomology in Cornell University and in Leland Stanford Junior University. With many illustrations, engraved by Anna Botsford Comstock. New York: D. Appleton & Company; pp. 349, with six plates and many figures. Price, \$2.50.

In this little book Prof. Comstock has given us a treatise, not only of practical value to teachers and amateurs, but also one that the professional worker will find very handy to have just within reach, in order to settle some minor point that may suddenly present itself. Best of all, however, is the fact that the work is correct—a feature quite in contrast with some of the ordinary text-book entomology. There need be no hesitation about recommending this book to anyone, as its style, while not especially technical, is even more or less poetical, yet is never flippant or slipshod in expression. The illustrations are fine, and are not simply pictures, but help to simplify the text—almost anyone who is at all versed in entomology will at once recognize the Katydid on the cover. There is just one fault to be found with the book, and it is very doubtful if this is to be attributed to the author, and this is the title. A fascinating title may help to sell a novel, or some such work as that, but publishers should learn that this is not true with such books as this. However, it is no discredit to the author that his book should be found better than its title. For the present, and until there is something much better, I shall recommend this book to those who wish for a simple and accurate introduction to the difficult study of entomology.

F. M. W.

Mailed January 10th, 1898.

